

**REMARKS**

The claims are amended for the purpose of eliminating multiple claim dependencies.

A marked-up version of the claims, which indicates all amendments made, is submitted herewith.

None of the amendments introduces new matter.

An early and favorable examination is earnestly solicited.

Respectfully submitted,

*John C. Polano Reg. No. 36,036*  
*for Joseph B. Lerch*

Joseph B. Lerch  
Reg. No. 26,936  
Attorney for Applicant

Date: February 15, 2002

DARBY & DARBY P.C.  
805 Third Avenue  
New York, NY 10022  
212-527-7700

2005120 14065001

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File No: 4634/OK253USO

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: Adrian Lionel GRAY

Serial No: T/B/A (U.S. National Phase of PCT/ZA00/00136,  
filed August 16, 2000)

Filed: Concurrently Herewith

For: METALLURGICAL THERMOCOUPLE

**MARK UP TO PRELIMINARY AMENDMENT**

Hon. Commissioner of  
Patents and Trademarks  
Washington, DC 20231

Attn.: Box PCT, RO/US

Sir:

Prior to examination, Applicants wish to amend the above-identified application as follows.

**IN THE CLAIMS**

Please delete claim 17 and amend claims 5, 7-10 and 12-15 as follows:

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5. (Amended) A thermocouple as claimed in [any one of the preceding claims] claim 1 in which refractory material includes particulate borosilicate and boric acid powder.

7. (Amended) A thermocouple as claimed in [claims 5 or 6] claim 5 in which the boric acid comprises about 3% to 5% weight of the refractory material.

8. (Amended) A thermocouple as claimed in [any one of claims 5 to 7] claim 5 in which the boric acid content of the refractory material is about one half of the borosilicate content.

9. (Amended) A thermocouple as claimed in [any one of claims 2 to 8] claim 2 in which the tubes of the sheath are stainless steel.

10. (Amended) A thermocouple as claimed in [any one of claims 2 to 9] claim 2 in which the refractory material is predried at a temperature of between 135° and 150°C.

12. (Amended) A thermocouple as claimed in [any one of claims 2 to 11] claim 2 in which the refractory material is beaded before being formed into the sheath.

13. (Amended) A thermocouple as claimed in [any one of the preceding claims]

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claim 1 in which the tip is formed from a thermocouple cable with a negative metal tube housing a positive wire embedded in a low temperature sintering material [as defined in any one of claims 4 to 7 above].

14. (Amended) A thermocouple as claimed in [any of the preceding claim 1 to 12] claim 1 in which the tip is formed by providing a hot junction from the wires of the thermocouple cable and supported by a sheath as above defined with both tubes and the refractory formed to cap the hot junction.

15. (Amended) A thermocouple as claimed in [any one of claims 2 to 14] claim 2 in which the outer tube of the sheath is annealed after the constriction process and the refractory material at least partially sintered during the annealing process.

[17. A thermocouple substantially as described and illustrated in Fig. 1 of Fig. 2 of the accompanying drawings.]

Please add the following new claims 18-21:

18. A thermocouple as claimed in claim 2 in which refractory material includes particulate borosilicate and boric acid powder.

19. A thermocouple as claimed in claim 6 in which the boric acid comprises about

3% to 5% weight of the refractory material.

20. A thermocouple as claimed in claim 6 in which the boric acid content of the refractory material is about one half of the borosilicate content.

21. A thermocouple as claimed in claim 7 in which the boric acid content of the refractory material is about one half of the borosilicate content.

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